1. (Amended) A serial communication controller for transmitting and receiving a serial data stream including multiple serial data channels having portions which alternate in time with respect to each other, comprising:

B1

a plurality of functional units configured to operate in series according to a serial communication protocol, wherein each functional unit is configured to perform a different specific function of said serial communication protocol, and wherein the plurality of functional units operates in time sequence upon the portions of the multiple serial data channels; and

wherein the plurality of functional units is configured to perform said serial communication protocol on the multiple serial data channels.

B2

6. (Amended) A serial communication controller for transmitting and receiving a serial data stream including alternating portions of multiple serial data channels, comprising:

a plurality of functional units each configured to perform a specific function of a serial communication protocol, wherein each functional unit is a state machine having a set of unique operating states, and wherein each functional unit comprises a programmable state register, and wherein state information stored within the state register of a given functional unit determines the one of the unique operating states in which the functional unit is operating;

a memory unit including a separate portion allocated to each of the multiple serial data channels for storing the state information of the functional units; and

a microcontroller coupled to each of the plurality of functional units and to the memory unit, wherein the microcontroller is configured to transfer state information between the plurality of functional units and the memory unit

such that the plurality of functional units operates alternately upon the portions of the multiple serial data channels;

B2

wherein different state information is transferred for each serial data channel depending on which serial data channel's portion is being operated on by the plurality of functional units.

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11. (Twice Amended) A method for transmitting and receiving a serial data stream including alternating portions of multiple serial data channels, comprising:

providing a plurality of functional units each configured to perform a specific function of a serial communication protocol upon the portions of the multiple serial data channels, wherein each functional unit is a state machine having a set of unique operating states, and wherein state information stored within a given functional unit determines the one of the unique operating states in which the functional unit is operating; and

B3

transferring state information between the plurality of functional units and a memory unit such that the plurality of functional units operates alternately upon the portions of the multiple serial data channels;

wherein different state information is transferred for each serial data channel depending on which serial data channel's portion is being operated on by the plurality of functional units.

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14. (Amended) A serial communication system, comprising:

an interface unit adapted for coupling to a transmission medium, wherein the interface unit is configured to receive a receive serial data stream including alternating portions of multiple serial data channels from the transmission medium and to provide the receive serial data stream;

B4